STATE OF MISSOURI

DEPARTMENT OF NATURAL RESOURCES

MISSOURI CLEAN WATER COMMISSION

MISSOURI STATE OPERATING PERMIT

In compliance with the Missouri Clean Water Law, (Chapter 644 R.S. Mo. as amended, hereinafter, the Law), and the Federal Water Pollution Control Act (Public Law 92-500, 92nd Congress) as amended,

Permit No.	MO-0122157
Owner:	Enrique Piedra
Address:	2006 Bayview, Tierra Verde, FL 33715-2514
Continuing Authority:	Same as above
Address:	Same as above
Facility Name:	Green Meadows Skilled Care
Address:	Route 2, Box 251, Linn, MO 65051
Legal Description:	NW ¼, SW ¼, Sec. 22, T43N, R8W, Osage County
Receiving Stream:	Unnamed Tributary to Pointers Creek (U)
First Classified Stream and ID:	Pointers Creek (C)(01460)
USGS Basin & Sub-watershed No.:	(10290203-040001)

is authorized to discharge from the facility described herein, in accordance with the effluent limitations and monitoring requirements as set forth herein:

FACILITY DESCRIPTION

Outfall #001 - Domestic Wastewater - SIC #4952
No-discharge System
Single cell storage lagoon/wastewater irrigation/sludge is retained in lagoon.
Design population equivalent is 90.
Design flow is 10,160 gallons per day.
Actual flow is 9,500 gallons per day.
Design sludge production is 1.4 dry tons per year.

This permit authorizes only wastewater discharges under the Missouri Clean Water Law and the National Pollutant Discharge Elimination System; it does not apply to other regulated areas. This permit may be appealed in accordance with Section 644.051.6 of the Law.

November 26, 2003
Effective Date

Stephen M. Mahfood, Director, Department of Natural Resources
Executive Secretary, Clean Water Commission

November 25, 2008
Expiration Date

G. Irene Crawford, Director, Northeast Regional Office

FACILITY DESCRIPTION (continued)

Outfall #001 – Green Meadows Health Care Center

Receiving Stream Watershed: Facility is located within 2 miles Pointers Creek, a losing stream.

Facility Type:
No-discharge Storage and Irrigation System for year seasonal flows into losing stream.

Design Basis:	**Avg Annual**	
Design dry weather flows:	10,160	gpd
Design with 1-in-10 year flows:	13,119	gpd
Design PE 90		
Actual dry weather flows	9,500	gpd
Actual with 1-in-10 year flows	12,459	gpd

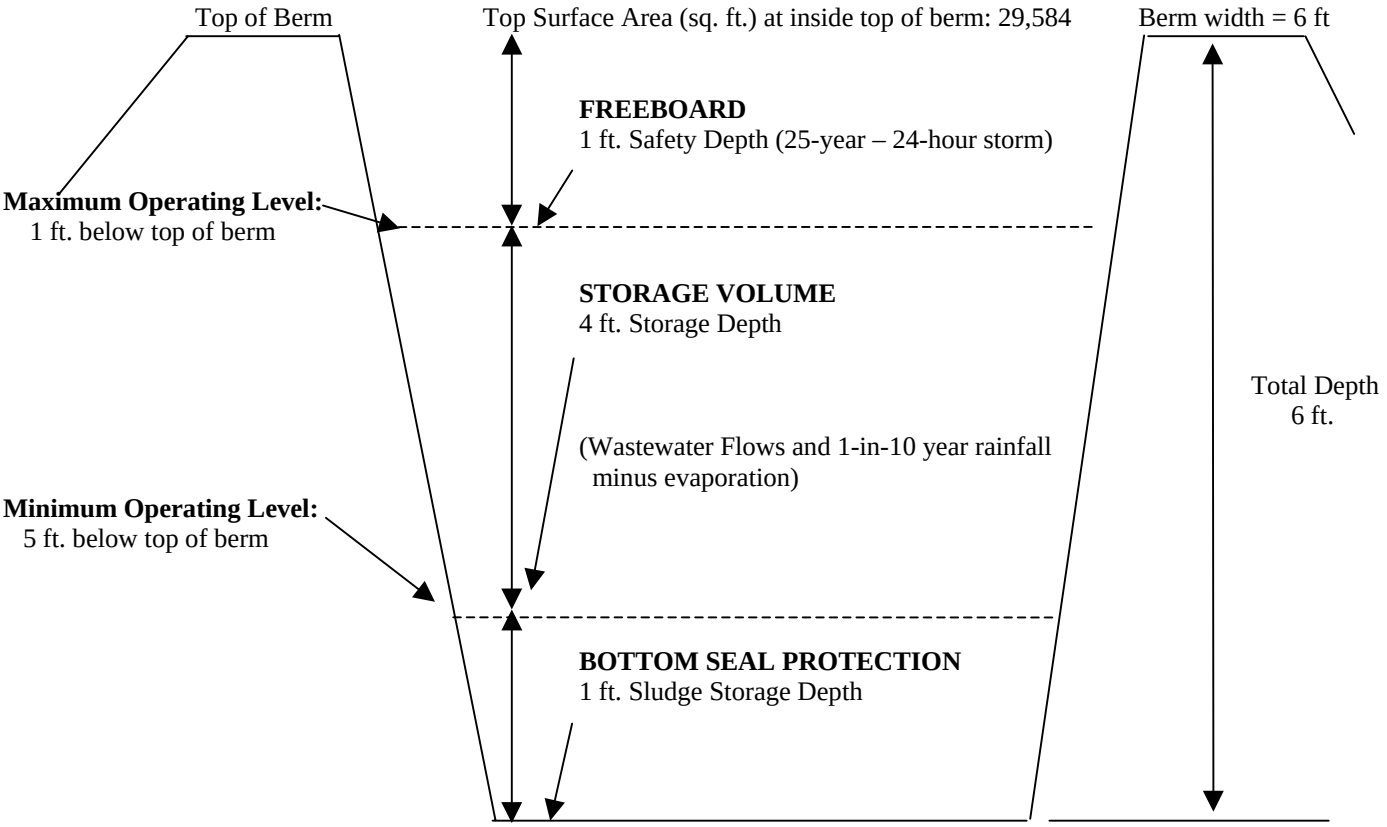
Storage Basin/Tank:
Freeboard for basin: 1 foot
Storage volume (minimum to maximum water levels) 711,019 gallons

Days of Storage
Storage Capacity:

Design for dry weather flows:	70 days
Design with 1-in-10 year flows:	54 days
Actual for dry weather flows:	93 days
Actual with 1-in-10 year flows:	57 days

Land Application:
Irrigation Volume/year: 3,898,142 gallons (including 1-in-10 year flows)
Irrigation areas: 12 acres at design loading (2.7 acres total available)
Application rates/acre: 0.5 inch/hour; 1.0 inch/day; 3.0 inches/week; 44 inches/year
Field slopes: less than 12 percent
Equipment type: 6 head sprinkler system
Vegetation: grass hay
Application rate is based on: X hydraulic loading rate

LAGOON PROFILE



Cell #001

Lagoon Dimensions:	**(Length x Width)**	**Surface Area**		**Depth from Bottom**	**Pump down (from top of berm)**
Center Line Top Berm:	178x178	31,684	sq.ft.	by 6 feet depth	
Inside Top Berm:	172x172	29,584	sq.ft.	by 6 feet depth	
Freeboard: (top berm to max op level):				5 feet depth	1 feet
Maximum operating level:				5 feet depth	1 feet
Minimum operating level:				1.0 feet depth	5 feet
Aerobic BOD design basis:				3.0 feet depth	3 feet

Storage volume (minimum to maximum water levels): 711,018 gallons

Berm top width: 6 feet Berm runoff area (Centerline to maximum op. level): 27,556 sq.ft.

1-in-10 year annual storm water flows into lagoon (R-E): 3633 cu.ft. (1,008,050 gallons)

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

The permittee is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this permit. The final effluent limitations shall become effective upon issuance and remain in effect until expiration of the permit. Such discharges shall be controlled, limited and monitored by the permittee as specified below:

OUTFALL NUMBER AND EFFLUENT PARAMETER(S)	UNITS	FINAL EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
Outfall #001 - Emergency discharge from lagoon (Note 1)						
Flow	MGD	*			once/day**	24 hr. estimate
Biochemical Oxygen Demand$_5$	mg/L		45	45	once/week**	grab
Total Suspended Solids	mg/L		45	45	once/week**	grab
Fecal Coliform	#/100mL	1000		400	once/week**	grab
Ammonia Nitrogen as N	mg/L	*			once/week**	grab
Temperature	°F	*			once/week**	grab
pH – Units	SU	***		***	once/week**	grab
Stormwater Runoff from Irrigation Sites (Note 2)						
Biochemical Oxygen Demand$_5$	*				once/month	grab
Ammonia as N	*				once/month	grab
Nitrate as N	*				once/month	grab
MONITORING REPORTS SHALL BE SUBMITTED QUARTERLY; THE FIRST REPORT IS DUE April 28, 2004.						
Land Application Operational Monitoring (Notes 3 & 4)						
Lagoon Freeboard	feet	*			once/month	measured
Irrigation Period	hours	*			daily	total
Volume Irrigated	gallons	*			daily	total
Application Area	acres	*			daily	total
Application Rate	inches/ acre	*			daily	total
Rainfall	inches	*			daily	total
MONITORING REPORTS SHALL BE SUBMITTED ANNUALLY; THE FIRST REPORT IS DUE January 28, 2005.						
Irrigated Wastewater (Note 5 & 6)						
Biochemical Oxygen Demand$_5$	mg/L	*			once/year	grab
Total Suspended Solids	mg/L	*			once/year	grab
Fecal Coliform	#/100mL	*			once/year	grab
pH - Units	SU	***			once/year	grab
Total Kjeldahl Nitrogen as N	mg/L	*			once/year	grab
Nitrate/Nitrite as N	mg/L	*			once/year	grab
Ammonia Nitrogen as N	mg/L	*			once/year	grab
MONITORING REPORTS SHALL BE SUBMITTED ANNUALLY; THE FIRST REPORT IS DUE January 28, 2005. THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.						

B. STANDARD CONDITIONS

IN ADDITION TO SPECIFIED CONDITIONS STATED HEREIN, THIS PERMIT IS SUBJECT TO THE ATTACHED Parts I & III STANDARD CONDITIONS DATED October 1, 1980 and August 15, 1994, AND HEREBY INCORPORATED AS THOUGH FULLY SET FORTH HEREIN.

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (continued)

* Monitoring requirement only.
** Monitor only when discharge occurs. Report as no-discharge when a discharge does not occur during the report period.
*** pH is measured in pH units and is not to be averaged. The pH shall be maintained above 6.0 pH units.

Note 1 - **No-discharge facility requirements**. Wastewater shall be stored and land applied during suitable conditions so that there is no-discharge from the lagoon or irrigation site. An emergency discharge may occur when excess wastewater has accumulated above feasible irrigation rates due to precipitation exceeding the 1-in-10-year 365 day rainfall or the 25-year 24-hour storm event.

Note 2 – Monitoring during the first hour after a discharge from a rainfall event greater than 0.2 inch in a 24-hour period. Storm water runoff samples shall be collected for each storm water discharge point and the sample from each outfall shall be tested separately.

Note 3 - Records shall be maintained and summarized into an annual operating report, which shall be submitted by January 28th of each year for the previous calendar year period using report forms approved by the Department. The report shall include the following:

a. Record of maintenance and repairs performed during the year, average number of times per month the facility is checked to see if it is operating properly, and description of any unusual operating conditions encountered during the year;
b. The number of days the lagoon has discharged during the year, the discharge flow, the reasons discharge occurred and effluent analysis performed; and
c. A summary of the irrigation operations including freeboard at the start and end of the irrigation season, the number of days of irrigation for each month, the total gallons irrigated, the total acres used, crops grown, crop yields per acre, the application rate in inches/acre per day and for the year, the monthly and annual precipitation received at the facility and summary of testing results.

Note 4 - Lagoon freeboard shall be reported as lagoon water level in feet below top of berm. See Special Conditions for Wastewater Irrigation System requirements.

Note 5 - Wastewater that is irrigated shall be sampled at the irrigation pump or wet well.

Note 6 - Monitor once per year during the month of June.

C. SPECIAL CONDITIONS

1. Report as no-discharge when a discharge does not occur during the report period.

2. Outfalls must be marked in field and on the topographic site map submitted with the permit application.

3. Water Quality Standards
   a. Discharges to waters of the state shall not cause a violation of water quality standards rule under 10 CSR 20-7.031, including both specific and general criteria.
   b. General Criteria. The following general water quality criteria shall be applicable to all waters of the state at all times including mixing zones. No water contaminant, by itself or in combination with other substances, shall prevent the waters of the state from meeting the following conditions:
      (1) Waters shall be free from substances in sufficient amounts to cause the formation of putrescent, unsightly or harmful bottom deposits or prevent full maintenance of beneficial uses;
      (2) Waters shall be free from oil, scum and floating debris in sufficient amounts to be unsightly or prevent full maintenance of beneficial uses;
      (3) Waters shall be free from substances in sufficient amounts to cause unsightly color or turbidity, offensive odor or prevent full maintenance of beneficial uses;
      (4) Waters shall be free from substances or conditions in sufficient amounts to result in toxicity to human, animal or aquatic life;
      (5) There shall be no significant human health hazard from incidental contact with the water;
      (6) There shall be no acute toxicity to livestock or wildlife watering;
      (7) Waters shall be free from physical, chemical or hydrologic changes that would impair the natural biological community;
      (8) Waters shall be free from used tires, car bodies, appliances, demolition debris, used vehicles or equipment and solid waste as defined in Missouri's Solid Waste Law, section 260.200, RSMo, except as the use of such materials is specifically permitted pursuant to section 260.200-260.247.

4. This permit may be reopened and modified, or alternatively revoked and reissued, to:
   (a) Comply with any applicable effluent standard or limitation issued or approved under Sections 301(b)(2)(C) and (D), 304(b)(2), and 307(a) (2) of the Clean Water Act, if the effluent standard or limitation so issued or approved:
      (1) contains different conditions or is otherwise more stringent than any effluent limitation in the permit; or
      (2) controls any pollutant not limited in the permit.
   (b) Incorporate new or modified effluent limitations or other conditions, if the result of a waste load allocation study, toxicity test or other information indicates changes are necessary to assure compliance with Missouri’s Water Quality Standards.
   (c) Incorporate new or modified effluent limitations or other conditions if, as the result of a watershed analysis, a Total Maximum Daily Load (TMDL) limitation is developed for the receiving waters which are currently included in Missouri’s list of waters of the state not fully achieving the state’s water quality standards, also called the 303(d) list.

   The permit as modified or reissued under this paragraph shall also contain any other requirements of the Clean Water Act then applicable.

C. SPECIAL CONDITIONS (continued)

5. Sludge and Biosolids Use For Domestic Wastewater Treatment Facilities
   a. Permittee shall comply with the pollutant limitations, monitoring, reporting, and other requirements in accordance with the attached permit Standard Conditions.
   b. If sludge is not removed by a contract hauler, permittee is authorized to land apply biosolids that are removed from the domestic wastewater treatment lagoon during lagoon clean-out and maintenance activities. Permit Standard Conditions, Part III shall apply to the land application of biosolids. Permittee shall notify the department at least 180 days prior to the planned removal of biosolids from the lagoon. The department may require submittal of a biosolids management plan for department review and approval as determined appropriate on a case-by-case basis.

6. Lagoons and earthen basins shall have a liner that is designed, constructed and maintained. If operating records indicate excessive percolation, the department may require corrective action as necessary to eliminate excess leakage.

7. Wastewater Irrigation System.

   a. Discharge Reporting. Any unauthorized discharge from the lagoon or irrigation system shall be reported to the department as soon as possible but always within 24 hours. Discharge is allowed only as described in the Facility Description and Effluent Limitations sections of this permit.

   b. Lagoon Operating Levels - No-discharge Systems. The minimum and maximum operating water levels for the storage lagoon shall be clearly marked. Each lagoon shall be operated so that the maximum water elevation does not exceed one foot below the overflow point except due to excedances of the 1-in-10 year or 25-year-24 hour storm events. Wastewater shall be land applied whenever feasible based on soil and weather conditions and permit requirements. Storage lagoon(s) shall be lowered to the minimum operating level prior to each winter by November 30.

   c. Emergency Spillway. Lagoons and earthen storage basins should have an emergency spillway to protect the structural integrity of earthen structures during operation at near full water levels and in the event of overflow conditions. The spillway shall be at least one foot below top of berm. The department may waive the requirement for overflow structures on small existing basins.

   d. General Irrigation Requirements. The wastewater irrigation system shall be operated so as to provide uniform distribution of irrigated wastewater over the entire irrigation site. A complete ground cover of vegetation shall be maintained on the irrigation site unless the system is approved for row crop irrigation. Wastewater shall be land applied only during daylight hours. The wastewater irrigation system shall be capable of irrigating the annual design flow during an application period of less than 100 days or 800 hours per year.

   e. Saturated/Frozen Conditions. There shall be no irrigation during frozen, snow covered, or saturated soil conditions.

   f. Buffer Zones. There shall be no irrigation within 300 feet of any down gradient pond, lake, sinkhole, losing stream or water supply withdrawal; 100 feet of gaining streams or tributaries; 150 feet of dwelling; or 50 feet of the property line.

   g. Public Access Restrictions. Public access shall not be allowed to the irrigation site(s).

C. SPECIAL CONDITIONS (continued)

7. Wastewater Irrigation System (continued).

h. Operation and Maintenance Manual.
The permittee shall develop, maintain and implement an Operation and Maintenance (O&M) Manual that includes all necessary items to ensure the operation and integrity of the waste handling and land application systems. Copies of the O&M Manual and subsequent revisions shall be submitted to Regional Office for review and approval. The O&M Manual shall be reviewed and updated at least every five years.

i. Nitrogen Loading Rates. Wastewater irrigation rates shall not exceed a nitrogen application rate of 150 pounds total nitrogen per acre per year. Hydraulic application rates exceeding 60 inches per acre per year shall calculate nitrogen loading rates and include results in the annual report. The calculation procedures are as follows: (Total N) x (0.226) x (inches per acre irrigated) = pounds total N per acre. Where Total N = [Total Kjeldahl Nitrogen (TKN) as N] + [Nitrate Nitrogen as N]. If the applied wastewater exceeds, 150 pounds total nitrogen per acre/year, the permittee must reduce the application rates or submit a revised permit application to request use of the Plant Available Nitrogen (PAN) method based on crop nitrogen requirements for harvested crops. PAN availability factors for surface application are: [Ammonia N x 0.6] + [Nitrate N x 0.9] + [Organic N x 0.6] = PAN. The annual report shall include testing results for wastewater, soils and crop yields and calculations for nitrogen applied and crop removal of nitrogen.

j. Equipment Checks during Irrigation. The irrigation system and application site shall be visually inspected at least once/day during wastewater irrigation to check for equipment malfunctions and runoff from the irrigation site.

D. SCHEDULE OF COMPLIANCE

1. The permittee shall submit an engineering report by February 1, 2004, that documents decisions made in the operations and maintenance of the facility relevant to compliance with design requirements in 10 CSR 20-8.
2. The permittee shall submit a construction permit application regarding the upgrade of the wastewater treatment facility by July 1, 2004.
3. The permittee shall complete construction and place upgraded facility in operation by July 1, 2005.